Patapsco/Back Rivers

SAV Distribution

The well-defined linkage between water quality and submerged aquatic vegetation (SAV) distribution and abundance make SAV communities good barometers of the health of estuarine ecosystems (Dennison *et al.*, 1993). SAV is important not only as an indicator of water quality, but it is also a critical nursery habitat for many estuarine species. Blue crab post-larvae are 30 times more abundant in SAV beds than adjacent unvegetated areas (Orth, 1992). Similarly, several species of waterfowl are dependant on SAV as food when they over-winter in the Chesapeake region (Perry and Deller, 1995).

SAV distribution is determined through the compilation of aerial photography directed by the Virginia Institute of Marine Science. Reports detailing methodology and annual SAV coverage are available at www.vims.edu/bio/sav. Details on species of SAV discussed in this report can be found at www.dnr.maryland.gov/bay/sav/key.

Habitat Status

The Chesapeake Bay Program has developed new criteria for determining SAV habitat suitability of an area based on water quality. The "Percent Light at Leaf" habitat requirement assesses the amount of available light reaching the leaf surface of SAV after being attenuated in the water column and by epiphytic growth on the leaves themselves (Kemp *et al.,* 2004). The document describing this new model is found on the Chesapeake Bay Program website (www.chesapeakebay.net/pubs/sav/index.html). The older "Habitat Requirements" of five water quality parameters are still used for diagnostic purposes (Dennison *et al.*, 1993).

Back River

2004 is the first year that the Virginia Institute of Marine Science has ever recorded SAV in the Back River with 30 acres being identified. There is no goal for this system (**figure 1**). Also, there is no ground-truthing information available for this area. The largest SAV beds are near Cuckold and Cedar Points. The water quality data from the monitoring station located between Stansbury Point and Muddy Gut indicates that Back River has passing phosphorous levels and fails all other habitat requirements (**figure 2**) for SAV growth and survival (Percent light at leaf, algae levels, light attenuation, and suspended solid concentrations, there is no nitrogen habitat requirement for oligohaline areas like Back River). Surprisingly, wild celery transplants performed in 1999 through 2003 in Long Creek (near the launch ramp at Rocky Point Park, Back River Neck area, near the mouth of Back River) have performed very well. In fall of 2005, there were approximately 2.5 acres of plants that survived the winter from the 1999 to 2003 plantings. There was evidence of the plants successfully flowering and producing

seeds, which will hopefully lead to more SAV recovery in the future.

Patapsco River

For the mesohaline Patapsco River, until 2004 only very small amounts of SAV have been recorded by VIMS, with the highest coverage in 1998 (14.5 acres) (**figure 1**). However, in 2004 a phenomenal 184 acres were identified, or 62% of the revised goal of 298 acres. These beds are in Shallow, Rock, Marley and Stone Creeks, Old Road Bay and in Masonville Cove in the upper part of the river. Ground-truthing has found 7 species of SAV in the Patapsco. In order of occurrence, these species are: Eurasian watermilfoil, horned pondweed, elodea, redhead grass, wild celery, curly pondweed and coontail. Water quality data from the monitoring station located near the Key Bridge and Fort Carroll Island indicates suspended solids and phosphorous levels pass while all other parameters fail the SAV habitat requirements (**figure 2**).

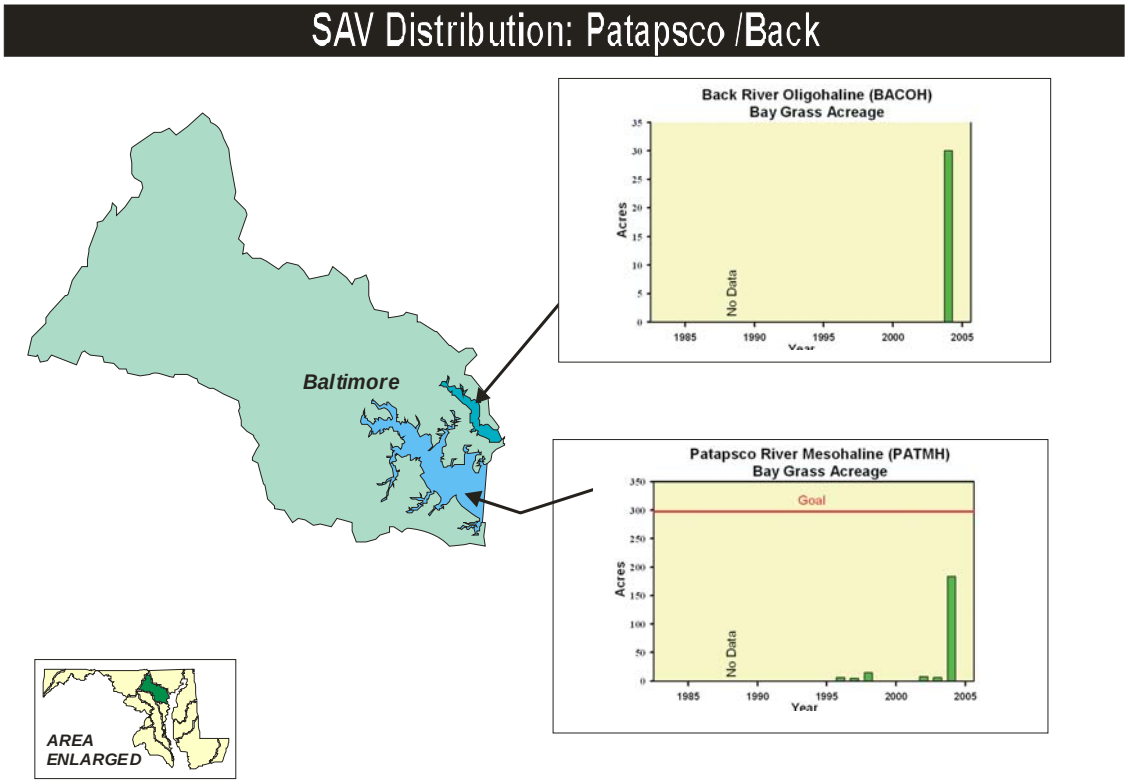

Figure 1: SAV coverage in Patapsco/Back Rivers, 1984 to 2004

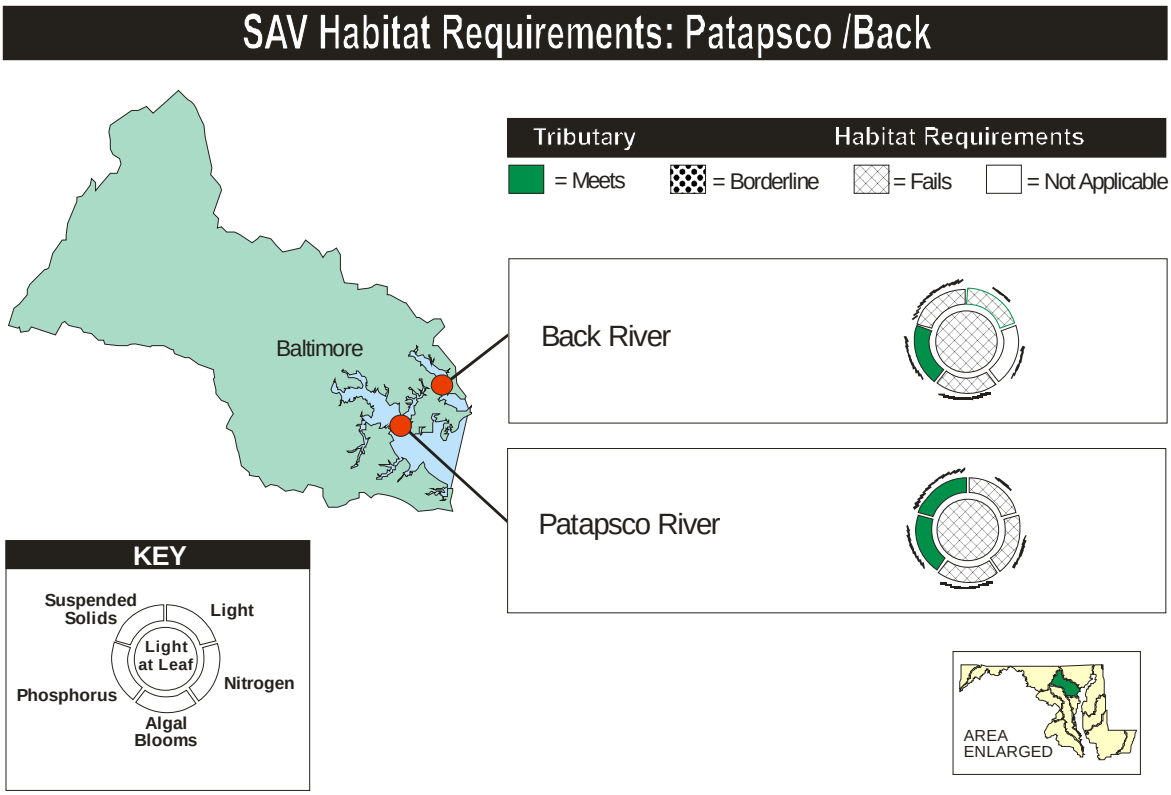

Figure 2: SAV habitat requirement attainment in Patapsco/Back Rivers

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